Instruction Manual
Models

RSA	RS1/RX1A
RSB	RS1/RX1B
RSC	RS1/RX1C
RSCC	RS1/RX1CC
RSD	RS1/RX1D
RSE	RS1/RX1E
RSEE	RS1/RX1EE

NOTE: THIS MANUAL IS PRESENTLY UNDERGOING REVISION. THE REVISED MANUAL WILL BE AVAILABLE WITHIN APPROXIMATELY 90 DAYS.

NJE Corporation
Dayton, N.J. 08810

NOTE:

Power supply should not be returned to the factory for in-warranty repair unless the unit remains inoperable after referring to the troubleshooting section in this manual and carrying out the instructions therein.

Any power supply returned to the factory for repair with blown fuse and/or improperly adjusted OVP or current limit settings will not be treated as in-warranty repair. Service and handling charges will apply.

For repair service or advice concerning an application problem please contact the nearest NJE Field representative or factory.

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Electrical Specification and Outline Drawings

NOTE: THE SPECIFICATIONS HEREIN APPLY ONLY TO STANDARD PUBLISHED CATALOG ITEMS. FOR SPECIFICATIONS APPLICABLE TO DEVIATED STANDARD ITEMS OR FOR UNITS HAVING SPECIAL OUTPUT VOLTAGES, CONSULT FACTORY.

SECTION I

THEORY OF OPERATION

1. GENERAL DESCRIPTION:

Refer to Chart 1 in Appendix B for converting component designations in following discussion to those on schematic.

The NJE RS line of modular power supplies are all silicon solid state circuits and include the utilization of intergrated circuits. Additionally, all supplies are series regulated and are manufactured with high quality industrial grade components. The quality of the power supply is intended to be consistent with that required for the most sophisticated and/or expensive electronic system in use today. These power supplies provide many features which provide the user with the maximum flexibility consistent with competitive cost, simplicity of design and long term reliability. These features include the following:

(OVP) Over Voltage Protection: SCR crowbar to limit maximum output voltage. Normally factory set at 1.5V or 20% (whichever is greater) above the nominal voltage range. OVP may be readjusted by customer via accessible adjustment.

Current Limiting: Current limiting may be set to limit maximum current from 75% to 120% of rated current. This current limiting adjustment is located internally and can be readjusted by customer.

Remote Programming: 1 volt per volt or 500 ohms per volt (output terminal strip).

Remote Sensing: Sensing terminals separate from the load terminals provide regulation of the voltage at the load rather than regulation of the voltage at the power supply output terminals. This eliminates the loss of load regulation due to the voltage drop in the wires connecting the supply to the load.

AC Input: All units are designed to operate to 47 HZ to 440 HZ. (No derating to 50 HZ operation). Input voltage range is 105 to 132 volts and optionally available is 205 to 265 volts AC.

Fault Protection: All power supplies are protected with primary fuses and/or circuit breakers. In addition most units have secondary fusing.

Cooling: All power supplies are convection cooled and will meet published specification without any additional heat sink and/or forced air cooling.

The circuits used are extremely reliable and feature a high degree of simplification. The circuit simplification results in standardization of material and also gives greater reliability due to the reduction of components used in the basic circuits. The overall design philosophy utilized in this product line is based on standardization, simplicity, reliability and high quality.

2. DETAILED CIRCUIT DESCRIPTION:

Each module in the **RS/RX line is similar in circuit** structure and may be represented by five basic functional blocks. (See Figure 1).

A. Transformer

B. Bias Circuit - 1) Rectifier and Filter
2) Regulator IC

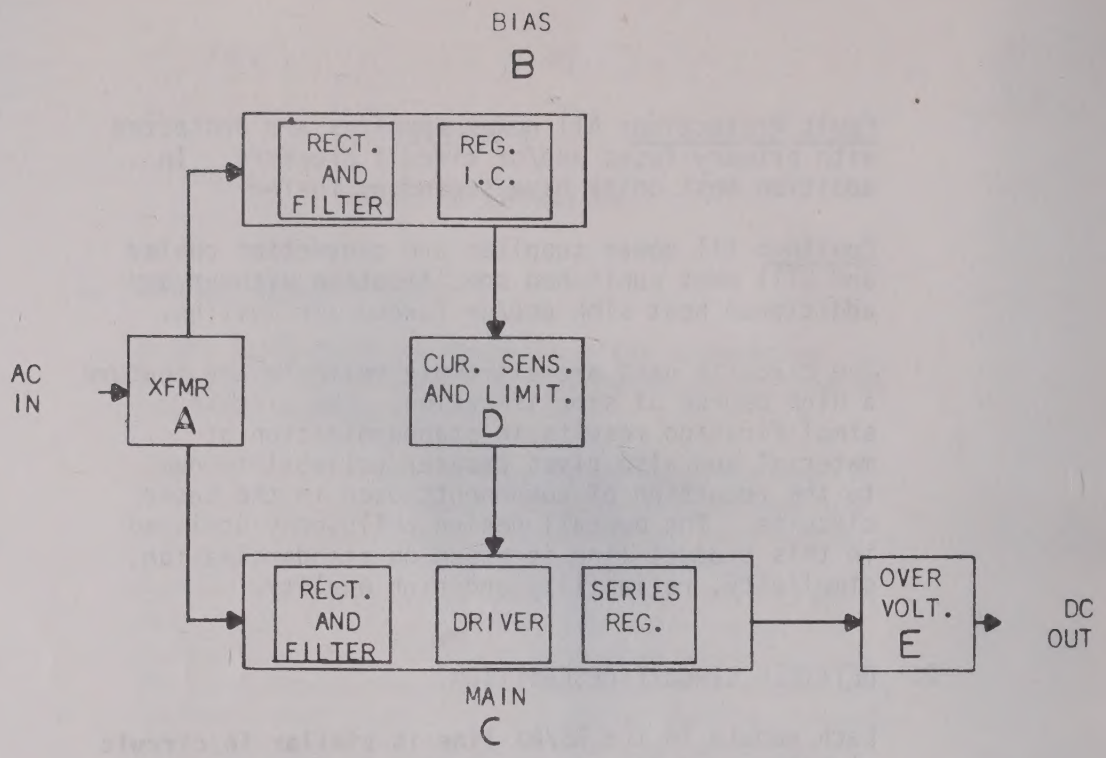
C. Main Circuit - 1) Rectifier and Filter
2) Series Regulator
3) Driver

D. Current Sensing and Limiting Circuit

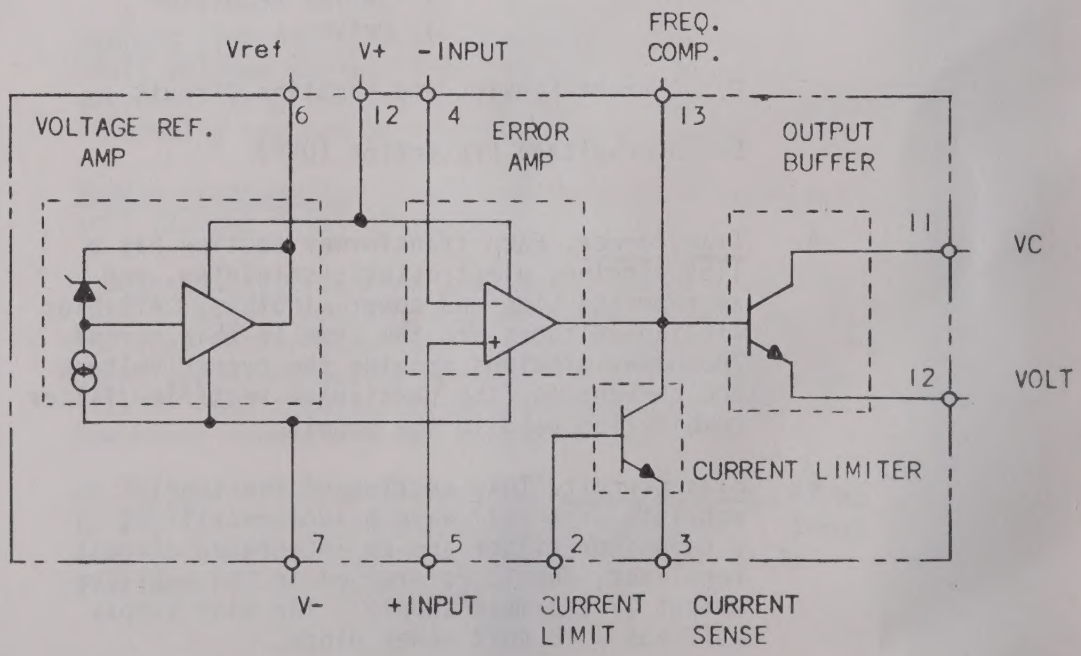
E. Overvoltage Protection (OVP)

A. Transformer: Each transformer section has a 115V winding, electrostatic shielding, and appropriate bias and power windings. All bias winding voltages are the same in this series. The power windings provide the proper voltage and current for the particular rectifier/filter combination used in the supply.

B. Bias Circuit: This section of the supply consists of a full wave bridge rectifier, a capacitor filter and an integrated circuit regulator, and is referenced to the positive output of the main supply. The bias supply utilizes a 12 volt zener diode.



BLOCK DIAGRAM
FIGURE 1



REGULATOR IC SCHEMATIC
FIGURE 2

The equivalent circuit (Figure 2) of the IC regulator shows four (4) basic circuits within the package.

1) A reference voltage source
2) A differential error amplifier
3) An output buffer
4) A current limit amplifier

The error amplifier amplifies the voltage difference between the reference voltage and the output proportional voltage. The error amplifier output acts, through one or more current amplifiers, to adjust the past transistor(s) drive until the output proportional voltage equals the reference voltage.

C. Main Circuit: This section is a full wave rectifier filtered by a capacitor and regulated by means of a series regulator. Depending on the power requirements, the series regulator consists of two or more NPN silicon power transistors connected in parallel with each pass transistor having an emitter resistor. The driver stage for the pass transistor(s) is a current driver circuit.

D. Current Sensing and Limiting Circuit: This section of the supply becomes effective when the output current reaches the preset limit of the supply.

The limit amplifier, an integral part of the IC voltage regulator, turns on, reducing the output voltage of the error amplifier of the IC. This results in reducing the power supply output voltage. The reduction of output voltage results in a corresponding reduction of output current which insures against excessive power dissipation in the series pass transistor(s).

E. Overvoltage Protection: All power supply units utilize a silicon unilateral switch (SUS) as an SCR driver.

SECTION II

OPERATION

PLEASE READ THESE INSTRUCTIONS BEFORE OPERATING THE SUPPLY

1. UNPACKING AND INSPECTION:

   Temporarily save all packing material. Read and save all instruction material. Inspect the physical condition of the unit for possible shipping damage. Particularly look for broken meters, controls, fuse holders, and dents, loose hardware and missing parts. Do not operate the unit if obvious or suspected mechanical damage has occurred.

2. ADJUSTMENTS:

   To place the supply in operation, connect a suitable load to the indicated load terminals with the sensing leads either jumpered to the output terminals at the supply (as when the unit is shipped) or connected remotely at the load (observe polarity).

   NOTE

   Sensing leads must never be left disconnected.

   Apply AC power to the indicated terminals. Output adjustment is achieved by a pot adjustment through an appropriately marked hole on the RSA through RSEE units.

   Over-voltage protection is factory set at 20% or 1.5 volts above nominal output (whichever is greater). The functioning of the OVP may be checked either by advancing the output adjustment or lowering the OVP adjustment until crowbarring occurs.

   OVP Adjustment: To set the OVP trip level, perform the following:

   1) Monitor the output voltage with a digital voltmeter.

   2) Advance OVP control to its extreme clockwise position.

   3) Set the voltage adjust control to the desired

output trip level with the supply unloaded. If additional voltage range is required an external resistance between the minus sense and the minus output terminal (500 ohm/volt) may be utilized.

4) Retard the OVP control slowly (CCW) to the point of OVP trip.

5) Remove AC power (to reset crowbar).

6) Retard the voltage adjust pot (CCW). On the EE units reset the circuit breaker.

7) Apply AC power. On the RSF, RSG, and RSH units reset circuit breakers.

8) Reset voltage adjust pot for proper output voltage.

In an environment where external system leads cause noise or spiking to be superimposed on the DC output, the OVP may be mistriggered. To change the response time of the OVP circuit, which is factory set at approximately 100 US, a capacitor change is required. Refer to Table #1 for capacitor values required to give desired response time of OVP circuit.

TABLE 1

CAPACITOR CX1	RESPONSE TIME
0.047 UF	50 US
0.2 UF	200 US
0.3 UF	300 US
0.47 UF	500 US

Current Limit Adjustment: Factory setting of the current limit adjustment is at 10% to 15% above the rated nominal current of the units. In an application where the limit is to be changed the following procedure applies:

1) Provide a suitable load that will draw the new desired limiting current. Also set the current limit pot, located on the main printed circuit board, to the maximum clockwise position.

2) Monitor the output voltage on an oscilloscope (A-C coupled 5 MV./CM. scale) and a digital voltmeter.

3) Rotate the current limit pot counter-clockwise until the ripple content of the output voltage increases by several millivolts. The digital voltmeter should show a slight drop in output voltage.

3. CONNECTIONS:

The RSA through RSEE units have barrier strip terminals for input and output connections; the RSF through RSH rack units have output studs. In either case, the positive or negative output terminal may be grounded or operated floating up to a maximum of 500 volts with respect to chassis. For recommended wire size and terminal board functions, see outline drawing.

NOTE

Output terminals of power supply should never exhibit a reverse voltage. A protective power diode should be connected across power supply outputs (anode to negative terminal) in systems where other power sources are used.

Remote Programming: The power supply output voltage may be remotely programmed by a voltage source (1 volt/volt) or a resistor (500 ohms/volts). See Figures 5 and 7 for connections.

Remote Sensing: The unit has provisions whereby the output voltage may be regulated directly at the load terminals. Under heavy loads poor regulation may occur at the load due to the voltage drop in the load leads if remote sensing is not used. Shielded wires should be used for connections between remote load and sensing

terminals on power supply. Wires of sufficient size should be used for load leads to minimize voltage drop in these leads. See Figure 4 for remote sensing connections; for local sensing, see Figure 3.

Mounting: When mounting the unit in an installation, care must be taken to provide sufficient air ventilation. The rating chart (Table 1) shows output currents at ambient temperatures. The ambient temperature is defined as the temperature one inch from each surface of the supply, excluding the top.

4. TEST SETUPS AND CONNECTION DIAGRAMS:

CONNECTION DIAGRAMS FOR RSA

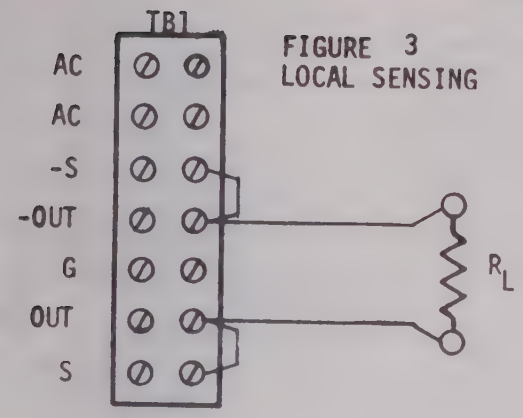


FIGURE 3
LOCAL SENSING

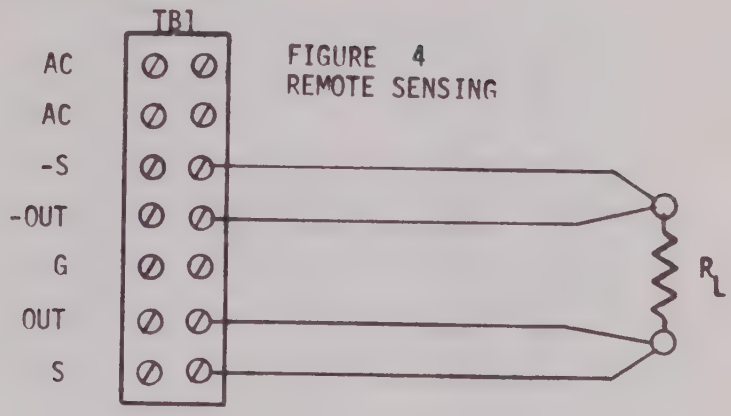


FIGURE 4
REMOTE SENSING

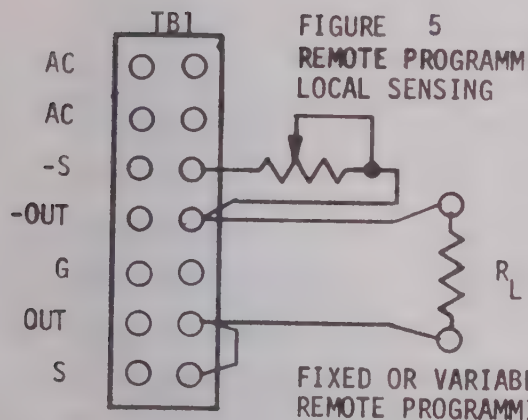


FIGURE 5
REMOTE PROGRAMMING
LOCAL SENSING

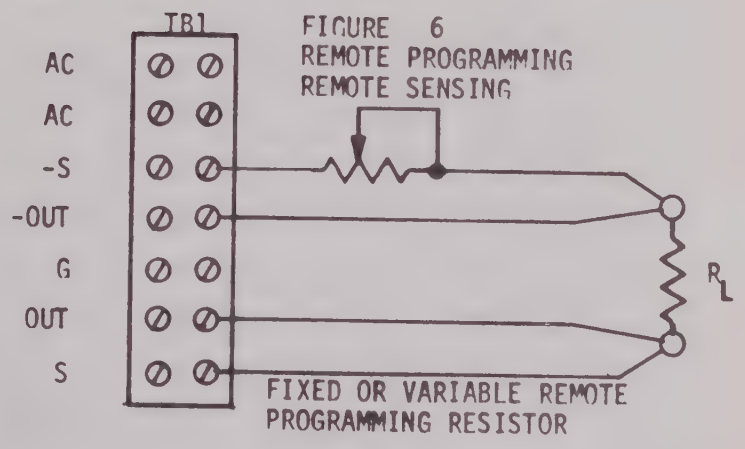


FIGURE 6
REMOTE PROGRAMMING
REMOTE SENSING

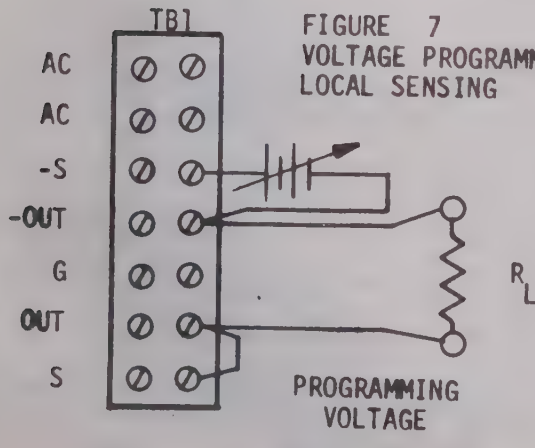


FIGURE 7
VOLTAGE PROGRAMMING
LOCAL SENSING

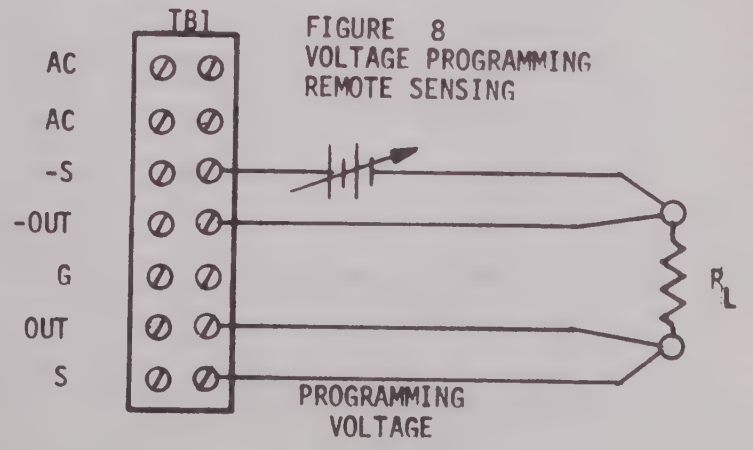


FIGURE 8
VOLTAGE PROGRAMMING
REMOTE SENSING

NOTE: FOR REMOTE SENSING A SHIELDED CABLE SHOULD BE USED.

CONNECTION DIAGRAMS FOR

MODULE SIZE B, C, CC, D AND E

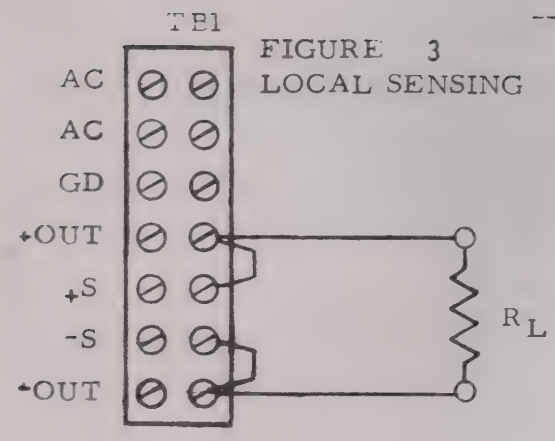


FIGURE 3
LOCAL SENSING

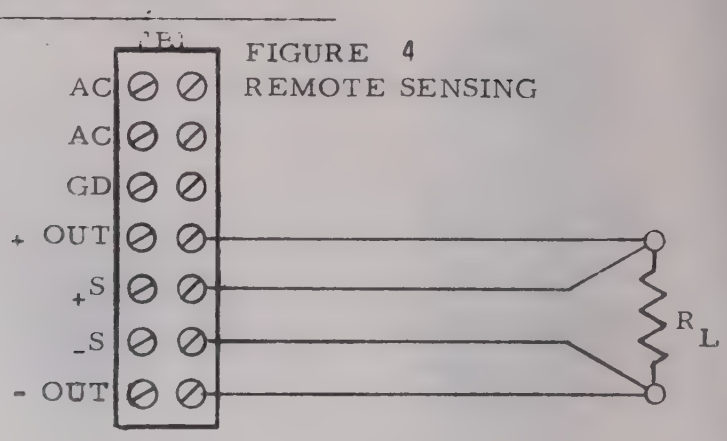


FIGURE 4
REMOTE SENSING

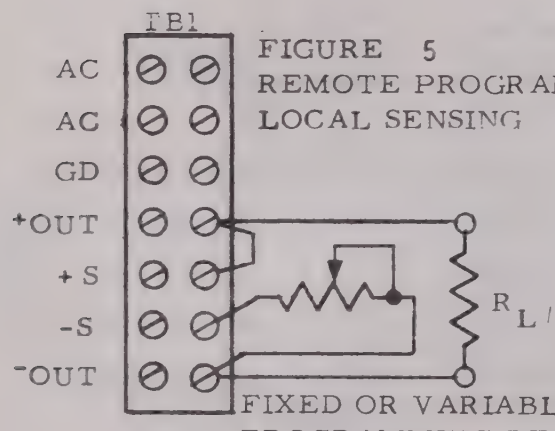


FIGURE 5
REMOTE PROGRAMMING
LOCAL SENSING

FIXED OR VARIABLE REMOTE
PROGRAMMING RESISTOR

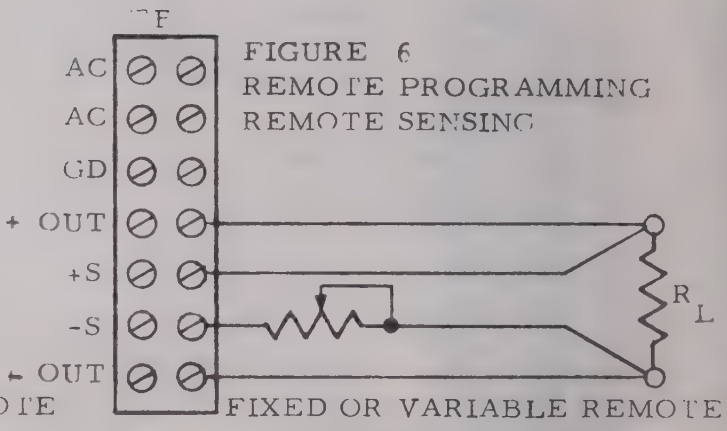


FIGURE 6
REMOTE PROGRAMMING
REMOTE SENSING

FIXED OR VARIABLE REMOTE
PROGRAMMING RESISTOR

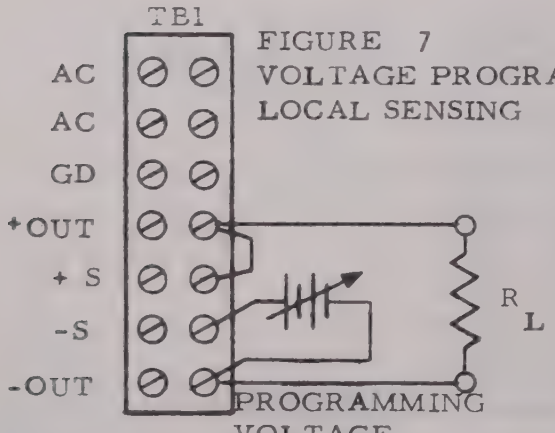


FIGURE 7
VOLTAGE PROGRAMMING
LOCAL SENSING

PROGRAMMING
VOLTAGE

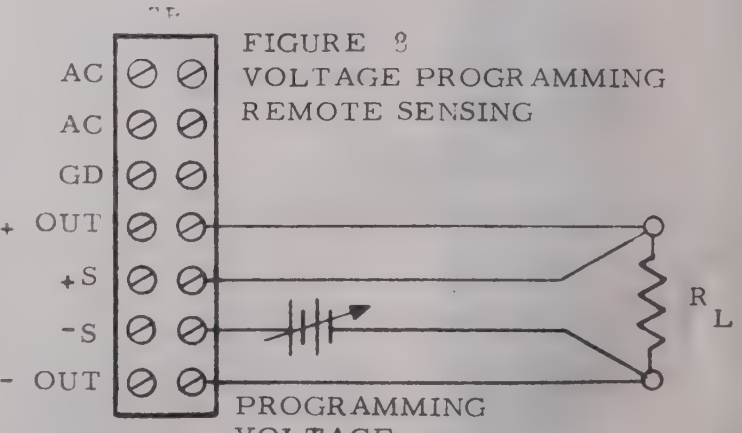


FIGURE 8
VOLTAGE PROGRAMMING
REMOTE SENSING

PROGRAMMING
VOLTAGE

NOTE: FOR REMOTE SENSING A SHIELDED CABLE SHOULD BE USED.

CONNECTION DIAGRAMS FOR RSEE OR RS1/RX1EE

NOTE: For RS1/RX1EE, TB2 is deleted and is replaced with 10-32 stud post for Pos/Neg.

FIGURE 3
LOCAL SENSING

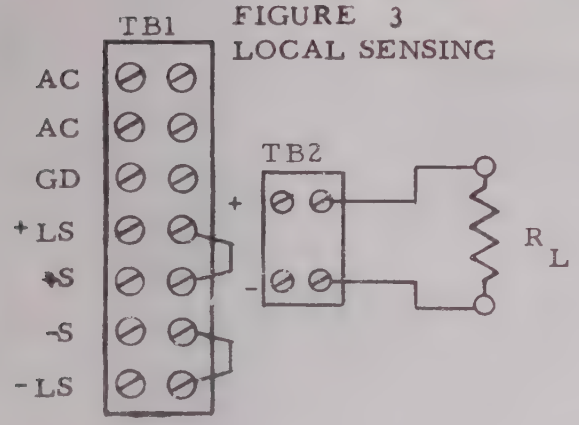
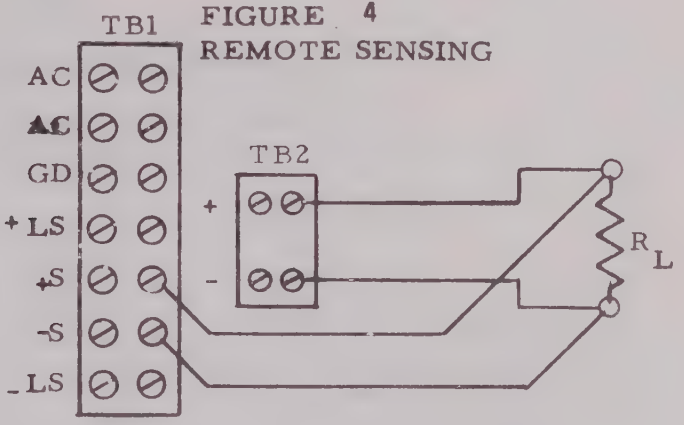


FIGURE 4
REMOTE SENSING



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LOCAL SENSING

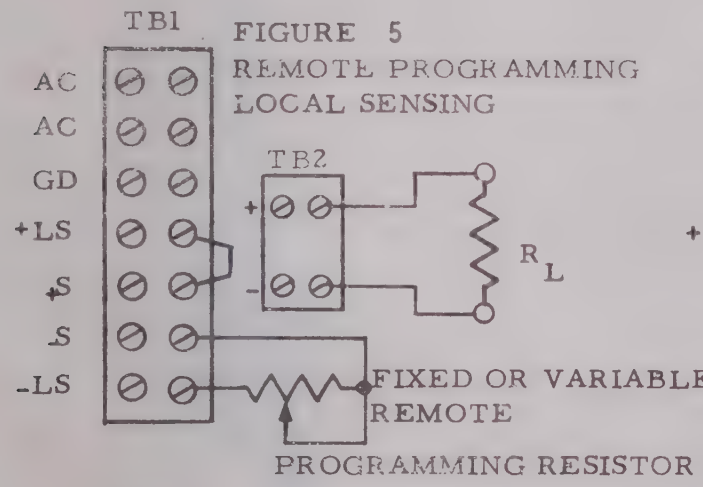

FIGURE 6
REMOTE PROGRAMMING
REMOTE SENSING

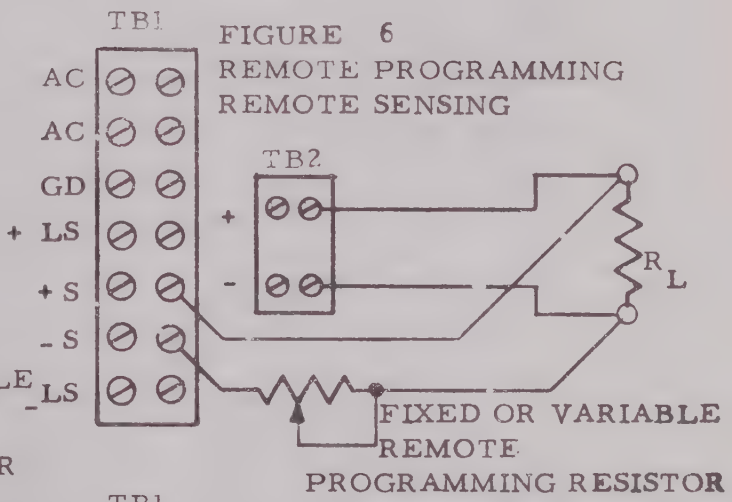

FIGURE 7
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LOCAL SENSING

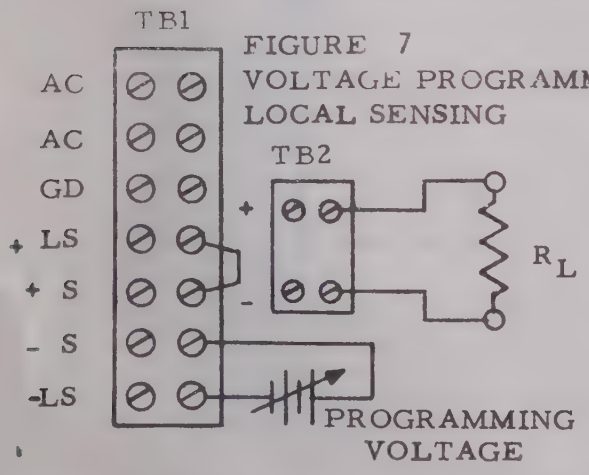
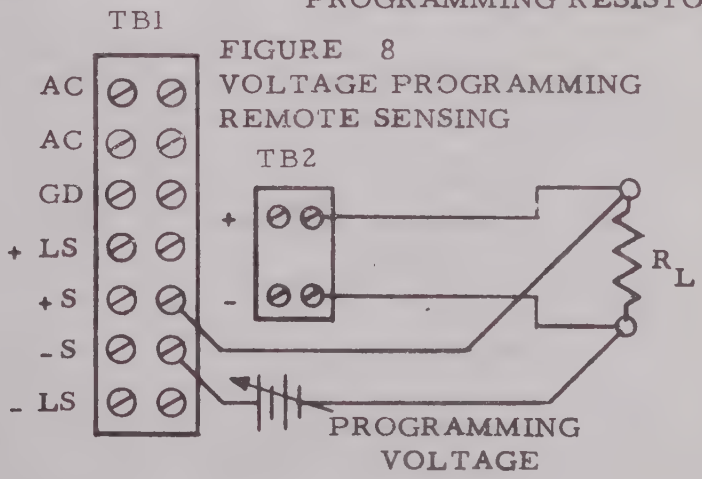


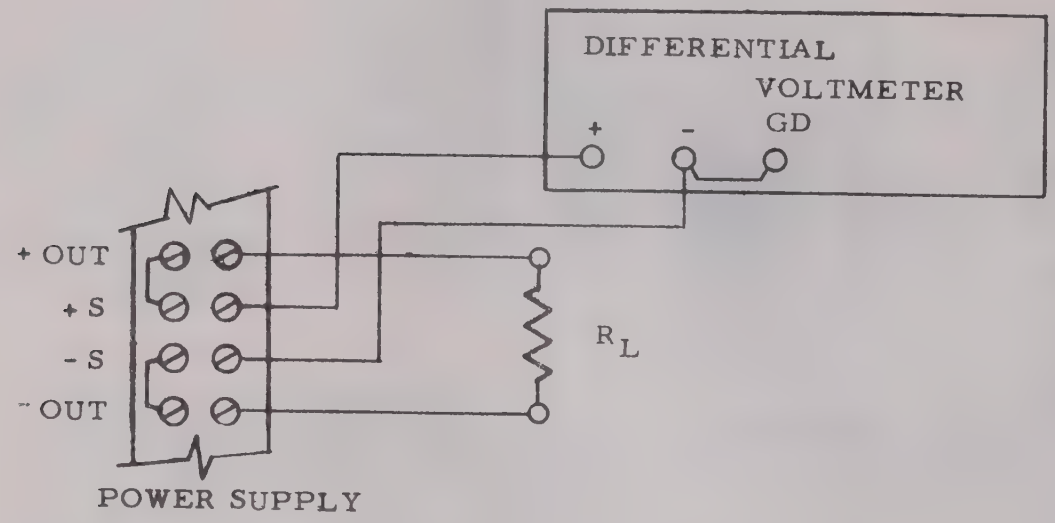
FIGURE 8
VOLTAGE PROGRAMMING
REMOTE SENSING



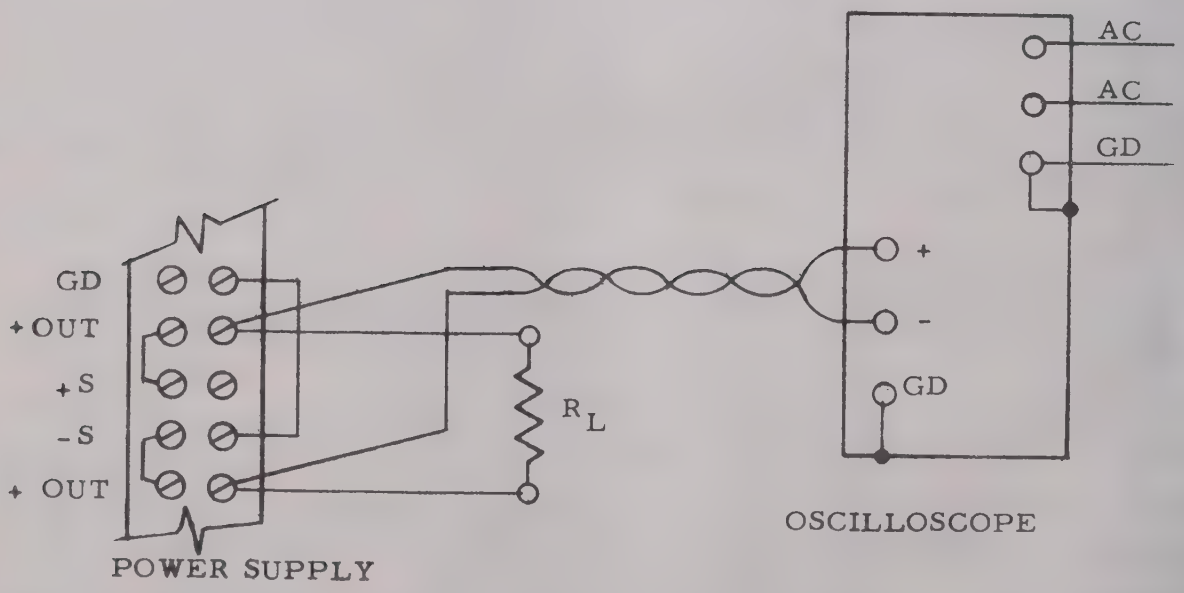
NOTE: FOR REMOTE SENSING A SHIELDED CABLE SHOULD BE USED

TEST SETUPS

LOAD AND LINE REGULATION TEST SET UP



RIPPLE AND NOISE TEST SET UP



SECTION III

REPAIR, TROUBLESHOOTING, AND MAINTENANCE

An understanding of the operation of power supplies in general, and this series in particular, plus suitable test equipment and replacement parts, is a requirement for proper troubleshooting of a defective supply.

TROUBLESHOOTING CHART

SYMPTOM	POSSIBLE CAUSE	SOLUTION
No Output	AC Input	Check TB pin 1 & 2 for AC Input power.
	Blown Fuse	Replace
	Wiring	Check positive and negative sense leads for proper termination and polarity.
	OVP Tripped	Output voltage set too high or OVP set too low. See OVP setup procedure.
Output Voltage		
Too High	Wiring	Check positive and negative sense leads for proper termination.
	Voltage Adjustment	Pot Adjustment
Too Low	Voltage Adjustment	Pot Adjustment
	OVP Tripped	See OVP set up procedure
	Current Limit	Check for excessive load. See setup procedure.
No Adjustment	Wiring	Sense lead termination incorrect
	Current Limit	Check for excessive load. See setup procedure.

APPENDIX A

RS

ELECTRICAL SPECIFICATIONS

Input: 105-132 volts; 47-440 HZ (no derating for 50 HZ operation).

Load Regulation: 0.01% for a no load to full load change in output current.

Line Regulation: 0.01% for any input voltage change within 105-132 volts.

Ripple and Noise: 3MV PP; 1.0 MV RMS (DC to 10 MegaHZ).

Temperature Coefficient: (With remote programming resistor) less than 0.01%/^{o}C change in output following a 30 minute warm up.

Temperature Ratings: Operating Temperature- 20^{o}C to +71^{o}C
Storage Temperature- 55^{o} to +85^{o}C

Stability: Better than 0.1% total drift for 8 hours following a 30 minute warm up under constant ambient conditions.

Overshoot: No voltage spikes for turn on, turn off, or power failure.

Transient Recovery Time: Less than 50 microseconds to recover to within 0.25% for line voltage changes of ± 10% about nominal or for a 50% load change from nominal.

Current Protection: Internally adjustable electronic overload and short circuit protection with automatic reset upon removal of load, adjustable from 75% to 120% of nominal rating.

RSA Units "Only": Internally adjustable electronic current regulation that will protect load and also provide current regulation within 1% at full load and adjustable over a range of 10% to 120%.

Remote Programming: 1 volt/volt or 500 ohms/volt. (For RSA units, see below).

RSA Only:

07A,B,C	500 ohm/volt
0 15 A	600 ohm/volt
0 32 B,C	600 ohm/volt
024, 060, 0120	800 ohm/volt

Remote Sensing: Sensing terminals, which are separate from the load terminals, permit the unit to provide regulation of the voltage at a remote load rather than at the power supply output terminals.

Cooling: Convection cooling on all models.

Controls: Output voltage adjust, over voltage setting adjust, and current limit adjust (internal).

OVP (Over Voltage Protection): Crowbar provided to limit maximum output voltage. Standard factory setting is at 1.5V or 20% (which is greater) above nominal voltage.

Options: (-230) change in normal input voltage to 205-265V AC.

(-E) Mil type conformal coating over all PC boards.

Mechanical: Finish - Modular - Gold Irridite Chassis

Black Identification

Rack Mounted Units:

Blue color chip #25109 (Fed. Std. 595) with white lettering on front panel; gold irridite chassis.

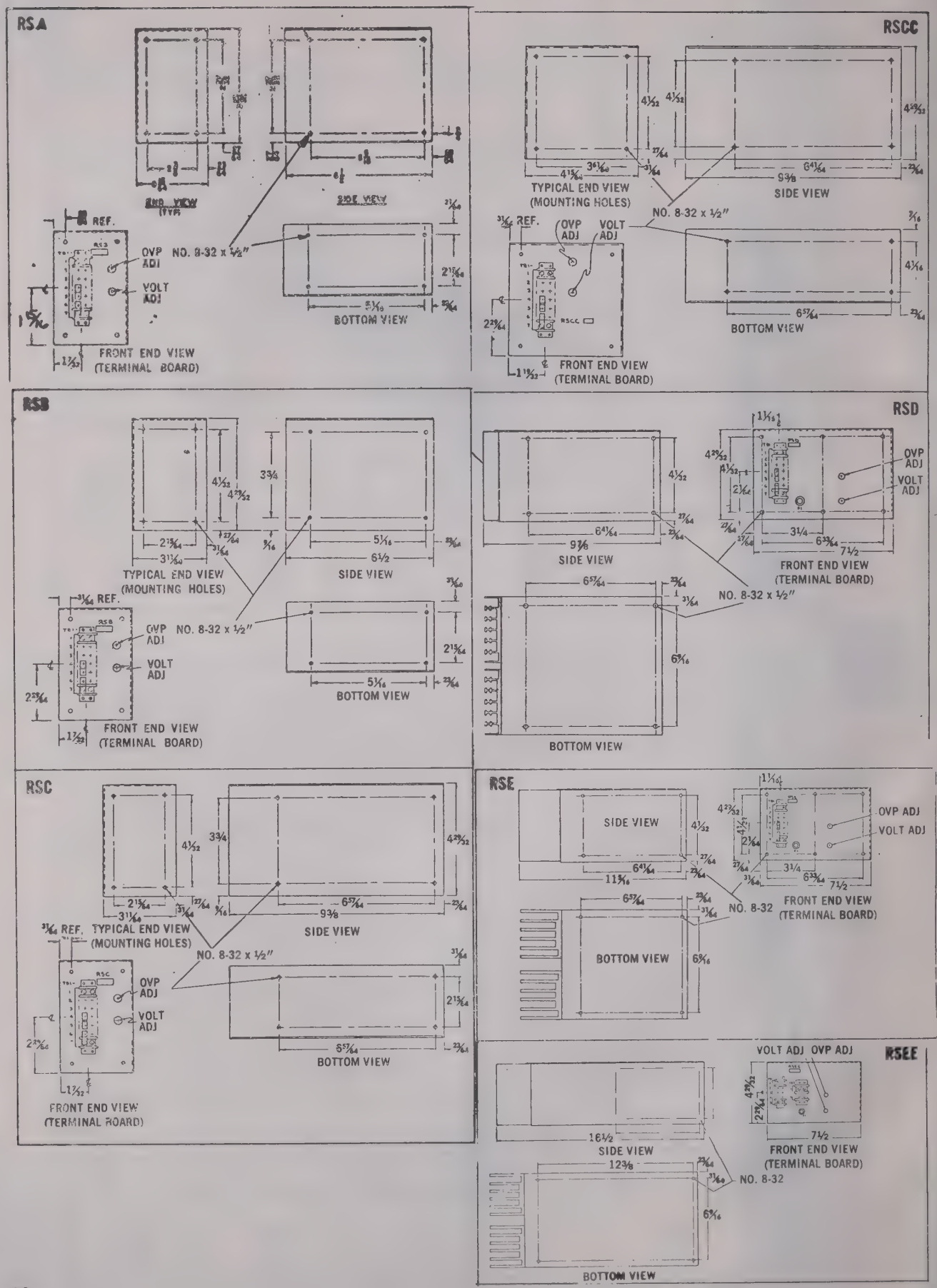
OUTPUT CURRENT RATINGS

Voltage (Range)	CURRENT				Model No.	Price	OVP	OVP Adj. Range
	40 C	50 C	60 C	71 C				
0-7V	.85	.75	.70	.55	RSA-07A-OVP	$ 79.00	incl.	4-10V
0-7V	1.7	1.5	1.4	1.1	RSA-07B-OVP	89.00	incl.	4-10V
0-7V	2.0	1.9	1.6	1.1	RSA-07C-OVP	99.00	incl.	4-10V
0-15V	.45	.4	.38	.38	RSA-015A-OVP	79.00	incl.	6-20V
0-15V	.9	.8	.75	.55	RSA-015B-OVP	89.00	incl.	6-20V
0-15V	1.2	1.1	1.0	.8	RSA-015C-OVP	99.00	incl.	6-20V
0-24V	.8	.75	.70	.60	RSA-024-OVP	99.00	incl.	15-31V
0-32V	.66	.60	.50	.32	RSA-032	99.00	10.00	15-42V
0-60V	.35	.31	.28	.25	RSA-060	99.00	20.00	20-70V
0-120V	.15	.10	.10	.10	RSA-0120	109.00	20.00	20-140V

RS

Voltage (Nominal)	Voltage (Range)	CURRENT 40°C	50°C	60°C	71°C	Model No.
5V	4.5 TO 5.5V	6.0	5.2	3.9	2.3	RSB-5-OVP
		9.0	7.6	6.0	4.3	RSC-5-OVP
		12.0	10.2	9.0	6.2	RSCC-5-OVP
		15.0	13.0	11.0	7.3	RSD-5-OVP
		22.0	20.0	18.0	11.0	RSE-5-OVP
		34.0	27.0	23.0	19.0	RSEE-5
		60.0	51.0	41.0	31.0	RSF-5
		100.0	94.0	78.0	57.0	RSG-5
		140.0	120.0	105.0	82.0	RSH-5
10V	9 TO 11V	4.0	3.6	3.2	2.8	RSB-10-OVP
		6.0	5.2	3.9	2.3	RSC-10-OVP
		9.0	8.1	7.2	6.3	RSCC-10-OVP
		12.0	10.8	9.6	9.48	RSD-10-OVP
		18.0	16.2	14.4	12.6	RSE-10-OVP
		27.0	24.3	21.6	18.9	RSEE-10
		39.0	35.1	31.2	27.3	RSF-10
		64.0	57.6	51.2	44.8	RSG-10
		87.0	78.3	69.6	60.9	RSH-10
12V	11 TO 13V	3.6	3.24	2.88	2.52	RSB-12-OVP
		5.5	4.95	4.40	3.85	RSC-12-OVP
		8.0	7.2	6.4	5.6	RSCC-12-OVP
		11.0	9.9	8.8	7.70	RSD-12-OVP
		16.0	14.4	12.8	11.2	RSE-12-OVP
		23.0	20.7	18.4	16.1	RSEE-12
		34.0	30.6	27.2	23.8	RSF-12
		56.0	50.4	44.3	39.2	RSG-12
		80.0	72.0	64.0	56.0	RSH-12
15V	14 TO 16V	3.0	2.7	2.4	2.10	RSB-15-OVP
		5.0	4.5	4.0	3.5	RSC-15-OVP
		7.0	6.6	6.0	5.0	RSCC-15-OVP
		10.0	9.3	8.7	5.8	RSD-15-OVP
		15.0	13.5	12.0	9.0	RSE-15-OVP
		21.0	20.0	17.5	14.0	RSEE-15
		30.0	27.0	24.0	21.0	RSF-15
		50.0	46.5	39.5	31.0	RSG-15
		72.0	64.8	57.6	50.4	RSH-15
18V	17 TO 19V	2.6	2.34	2.08	1.82	RSB-18-OVP
		4.5	4.3	3.8	2.7	RSC-18-OVP
		6.0	5.7	5.2	4.5	RSCC-18-OVP
		9.0	8.4	7.8	5.7	RSD-18-OVP
		14.0	12.5	11.0	8.9	RSE-18-OVP
		18.0	16.5	13.5	11.5	RSEE-18
		28.0	25.2	22.4	19.6	RSF-18
		42.0	30.0	24.5	18.5	RSG-18
		64.0	57.6	51.2	44.8	RSH-18

Voltage (Nominal)	Voltage (Range)	CURRENT 40°C	50°C	60°C	71°C	Model No.
20V	19 TO 21V	2.4	2.16	1.92	1.68	RSB-20-OVP
		4.2	3.9	3.5	2.5	RSC-20-OVP
		5.5	5.0	4.5	3.9	RSCC-20-OVP
		8.0	7.5	7.0	5.2	RSD-20-OVP
		13.0	11.5	10.5	9.1	RSE-20-OVP
		17.0	15.0	13.5	11.0	RSEE-20
		25.0	22.5	20.0	17.5	RSF-20
		39.0	35.0	31.0	24.0	RSG-20
		60.0	52.0	42.0	34.0	RSH-20
24V	23 TO 25V	2.0	1.8	1.6	1.4	RSB-24-OVP
		3.6	3.4	3.1	2.2	RSC-24-OVP
		5.0	4.6	4.2	3.7	RSCC-24-OVP
		7.5	7.0	6.4	5.3	RSD-24-OVP
		12.0	11.0	10.0	8.5	RSE-14-OVP
		15.0	13.5	12.0	10.5	RSEE-24
		24.0	20.0	16.5	13.0	RSF-24
		36.0	29.5	24.0	18.0	RSG-24
		52.0	47.0	42.0	35.0	RSH-24
28V	27 TO 29V	1.8	1.62	1.44	1.26	RSB-28-OVP
		3.0	2.7	2.6	1.8	RSC-28-OVP
		4.5	4.4	4.0	3.6	RSCC-28-OVP
		6.5	6.0	5.5	5.0	RSD-28-OVP
		11.0	10.0	8.9	7.8	RSE-28-OVP
		14.0	12.5	11.0	9.3	RSEE-28
		20.0	18.0	16.0	14.0	RSF-28
		33.0	30.0	25.0	19.0	RSG-28
		47.0	41.0	33.0	27.0	RSH-28
36V	34.5 TO 37.5V	1.3	1.17	1.04	.91	RSB-36-OVP
		2.3	2.1	1.9	1.5	RSC-36-OVP
		3.5	3.4	3.2	2.8	RSCC-36-OVP
		5.7	5.13	4.56	3.99	RSD-36-OVP
		8.5	7.63	6.8	5.95	RSE-36-OVP
		11.0	10.5	9.2	7.7	RSEE-36
		15.0	12.6	11.5	8.6	RSF-36
		25.0	22.5	18.0	14.5	RSG-36
		40.0	32.0	28.0	20.0	RSH-36
48V	46 TO 50V	1.1	1.0	.94	.87	RSB-48-OVP
		1.8	1.6	1.5	1.1	RSC-48-OVP
		3.0	2.9	2.6	2.5	RSCC-48-OVP
		4.2	3.78	3.36	2.94	RSD-48-OVP
		6.5	5.9	5.3	4.7	RSE-48-OVP
		8.0	7.4	6.8	5.7	RSEE-48
		12.0	11.0	9.0	7.2	RSF-48
		19.0	15.5	13.5	10.0	RSG-48
		28.0	25.2	22.4	19.6	RSH-48


RSA
REF.
OVP ADJ
VOLT ADJ
NO. 8-32 x ½"
FRONT END VIEW (TERMINAL BOARD)
BOTTOM VIEW
RSCC
TYPICAL END VIEW (MOUNTING HOLES)
SIDE VIEW
NO. 8-32 x ½"
BOTTOM VIEW
FRONT END VIEW (TERMINAL BOARD)
RSB
TYPICAL END VIEW (MOUNTING HOLES)
SIDE VIEW
REF.
OVP ADJ
NO. 8-32 x ½"
VOLT ADJ
BOTTOM VIEW
FRONT END VIEW (TERMINAL BOARD)
RSD
SIDE VIEW
OVP ADJ
VOLT ADJ
FRONT END VIEW (TERMINAL BOARD)
NO. 8-32 x ½"
BOTTOM VIEW
RSC
TYPICAL END VIEW (MOUNTING HOLES)
REF.
SIDE VIEW
OVP ADJ
NO. 8-32 x ½"
VOLT ADJ
BOTTOM VIEW
FRONT END VIEW (TERMINAL BOARD)
RSE
SIDE VIEW
OVP ADJ
VOLT ADJ
NO. 8-32
FRONT END VIEW (TERMINAL BOARD)
BOTTOM VIEW
RSEE
VOLT ADJ
OVP ADJ
SIDE VIEW
FRONT END VIEW (TERMINAL BOARD)
NO. 8-32
BOTTOM VIEW

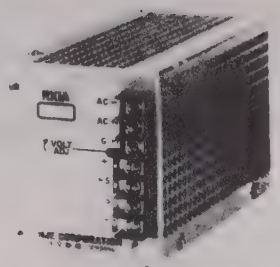
APPENDIX B

RS1/RX1 specifications

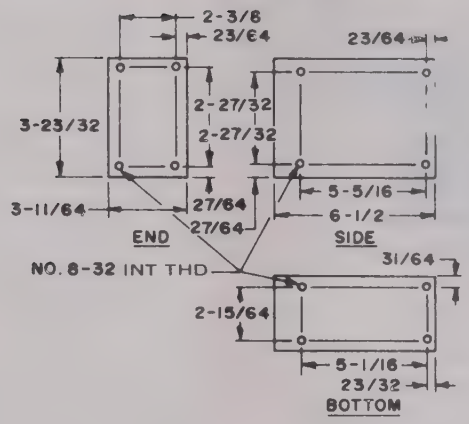
RS1		RX1
105 to 132 Volts,	**Input Rating (Voltage)**	105 to 125 Volts
47 to 440 HZ	**Input Frequency (Hz)**	57-63 HZ
.01% + 1 MV	**Regulation (line) min-max line**	.1% + 1 MV
.01% + 1 MV	**(Load) NL-FL**	.1% + 1 MV
1.0mv rms, 3mv p-p	**Ripple and noise**	1.0mv rms, 3mv p-p
.01%/°C	**Temperature Coefficient**	.015%/°C
−20°C to 71°C	**Temperature Range (operating)**	−20°C to 71°C
−55°C to 85°C	**(storage)**	−55°C to 85°C
.1%	**Stability**	.1%
None	**Overshoot**	None
25 μ sec. to .1%	**Transient Recovery Time**	25 μ sec. to .1%
Adjustable 75-125%	**Overload Protection (Fold back)**	Adjustable 75-125%
500 Ω/v	**Remote Prog. (Resistance)**	500 Ω/v
1 v/v	**(Voltage)**	1 v/v
provided	**AC Input**	provided
provided	**Remote Sensing:** Sensing terminals separate from the load terminals provide regulation against the voltage at the load rather than the voltage at the power supply output terminals. This eliminates the otherwise unavoidable load regulation due to the voltage drop in the wires connecting the supply to the load.	provided
Terminal Bd.	**Input/Output Connections**	Terminal Bd.
Convection	**Cooling**	Convection
DC output	**Controls**	DC output
Provided	**Remote Sensing**	Provided
Std. and Optional	**Overvoltage**	Std. and Optional
MILT-27A Grade 6	**Transformer**	MILT-27A Grade 6
Yellow iridite	**Finish**	Yellow iridite
2 or 3 sides	**Mounting**	2 or 3 sides
provided	**Options (205-265v Input) (Mil. coating)**	provided

RS1/RX1

A size



Model No.	Adj. Volt	Current Rating 40°C	50°C	60°C	70°C
RS1-A-5/OVP	4.5-5.5	3.4	2.9	2.3	1.7
RX1-A-5/OVP	4.5-5.5	4.0	3.4	2.7	2.0
RS1-A-12	11-13	2.3	1.9	1.5	1.3
RX1-A-12	11-13	2.7	2.2	1.8	1.5
RS1-A-15	14-16	2.0	1.7	1.3	1.1
RX1-A-15	14-16	2.4	2.0	1.6	1.3
RS1-A-24	23-25	1.35	1.0	.8	.7
RX1-A-24	23-25	1.5	1.2	1.0	.8

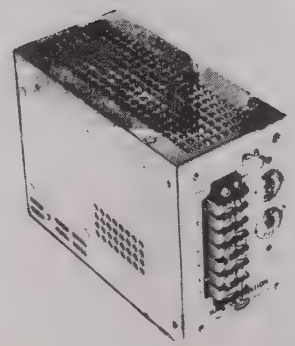


TBI TERMINAL BOARD LEGEND

TERM. NO.	SCREENED FUNCTION	RECOM'D WIRE SIZE	REMARKS
1	AC	NO. 20 AWG	AC
2	AC	NO. 20 AWG	AC RETURN
3	G	NO. 20 AWG	GROUND
4	+	NO. 18 AWG	POSITIVE OUT
5	+ S	NO. 20 AWG	NORMALLY JUMPED TO POS OUT
6	- S	NO. 20 AWG	NORMALLY JUMPED TO NEG OUT
7	-	NO. 18 AWG	NEGATIVE OUT

RS1/RX1

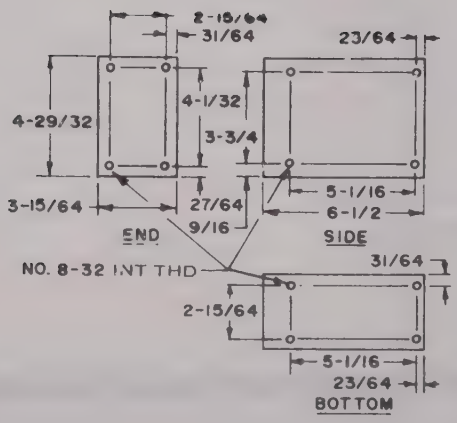
B size



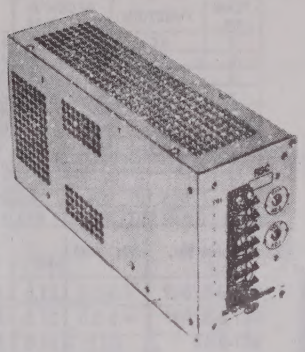
TBI TERMINAL BOARD LEGEND

TERM. NO.	SCREENED FUNCTION	RECOM'D WIRE SIZE	REMARKS
1	AC	NO. 20 AWG	AC
2	AC	NO. 20 AWG	AC RETURN
3	G	NO. 20 AWG	GROUND
4	+	NO. 18 AWG	POSITIVE OUT
5	+ S	NO. 20 AWG	NORMALLY JUMPED TO POS OUT
6	- S	NO. 20 AWG	NORMALLY JUMPED TO NEG OUT
7	-	NO. 18 AWG	NEGATIVE OUT

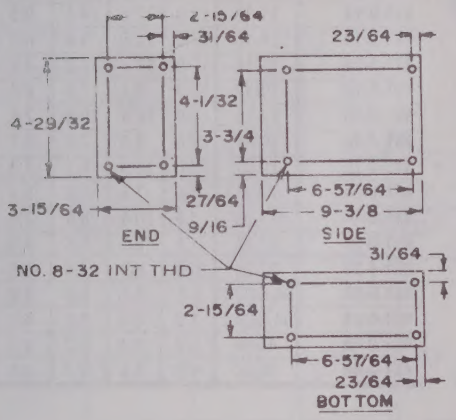
Model No.	Adj. Volt	Current Rating 40°C	50°C	60°C	71°C
RS1-B-5/OVP	4.5-5.5	6.0	5.2	4.0	2.8
RX1-B-5/OVP	4.5-5.5	7.5	5.8	4.1	3.0
RS1-B-10	9-11	4.0	3.6	3.2	2.7
RX1-B-10	9-11	4.4	3.8	3.4	2.9
RS1-B-12	11-13	3.6	3.3	2.9	2.4
RX1-B-12	11-13	4.4	3.7	3.1	2.5
RS1-B-15	14-16	3.2	2.9	2.5	2.0
RX1-B-15	14-16	3.7	3.2	2.7	2.2
RS1-B-18	17-19	2.8	2.5	2.2	1.8
RX1-B-18	17-19	3.4	2.9	2.5	2.0
RS1-B-20	19-21	2.5	2.2	2.0	1.7
RX1-B-20	19-21	3.0	2.6	2.8	1.8
RS1-B-24	23-25	2.2	2.0	1.8	1.4
RX1-B-24	23-25	2.7	2.5	2.2	1.6
RS1-B-28	27-29	2.0	1.8	1.6	1.4
RX1-B-28	27-29	2.4	2.2	2.0	1.6
RS1-B-36	34.5-37.5	1.4	1.3	1.1	1.0
RX1-B-36	34.5-37.5	1.7	1.6	1.4	1.3
RS1-B-48	46-50	1.2	1.1	1.0	0.9
RX1-B-48	46-50	1.4	1.3	1.2	1.1



RS1/RX1
C size

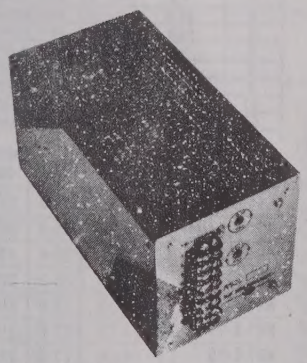


TBI TERMINAL BOARD LEGEND			
TERM. NO.	SCREENED FUNCTION	RECOMD WIRE SIZE	REMARKS
1	AC	NO. 20 AWG	AC
2	AC	NO. 20 AWG	AC RETURN
3	G	NO. 20 AWG	GROUND
4	+	NO. 16 AWG	POSITIVE OUT
5	+S	NO. 20 AWG	NORMALLY JUMPED TO POS OUT
6	−S	NO. 20 AWG	NORMALLY JUMPED TO NEG OUT
7	−	NO. 16 AWG	NEGATIVE OUT

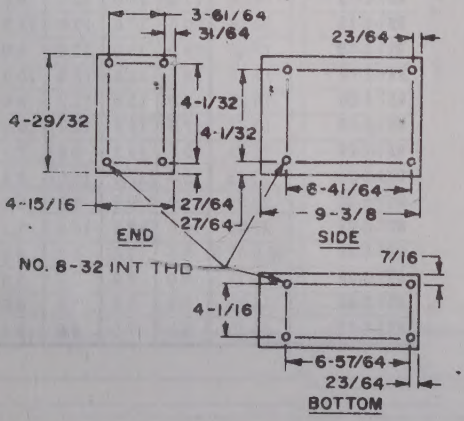


Model No.	Adj. Volt	40°C	Current Rating 50°C	60°C	71°C
RX1C5/OVP	4.5-5.5	11	8.5	6.5	5
RS1C5/OVP	4.5-5.5	9	7.6	6.0	4.3
RX1C10	9-11	7	6.1	5.5	4.6
RS1C10	9-11	6	5.2	4.4	3.8
RX1C12	11-13	6.5	6.1	5.5	4.6
RS1C12	11-13	5.5	5.0	4.5	4.0
RX1C15	14-16	6.0	5.6	5.1	4.5
RS1C15	14-16	5.0	4.5	4.0	3.5
RX1C18	17-19	5.5	4.7	4.1	3.4
RS1C18	17-19	4.8	4.3	3.9	3.0
RX1C20	19-21	5.0	4.4	3.9	3.2
RS1C20	19-21	4.4	4.0	3.6	3.0
RX1C24	23-25	4.5	4.0	3.5	2.8
RS1C24	23-25	3.9	3.5	3.3	2.5
RX1C28	27-29	4.0	3.5	3.1	2.3
RS1C28	27-29	3.6	3.1	2.8	2.0
RX1C36	34.5-37.5	3.0	2.6	2.3	1.8
RS1C36	34.5-37.5	2.5	2.2	2.8	2.0
RX1C48	46-50	2.3	2.1	1.8	1.5
RS1C48	46-50	2.0	1.8	1.6	1.3

RS1/RX1
CC size



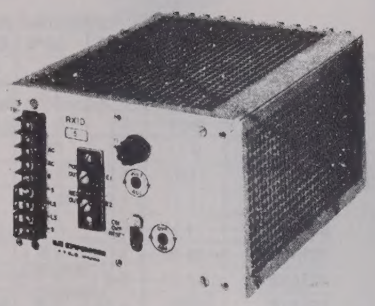
TBI TERMINAL BOARD LEGEND			
TERM NO.	SCREENED FUNCTION	RECOMD WIRE SIZE	REMARKS
1	AC	NO. 20 AWG	AC
2	AC	NO. 20 AWG	AC RETURN
3	G	NO. 20 AWG	GROUND
4	+	NO. 14 AWG	POSITIVE OUT
5	+S	NO. 20 AWG	NORMALLY JUMPED TO POS OUT
6	−S	NO. 20 AWG	NORMALLY JUMPED TO NEG OUT
7	−	NO. 14 AWG	NEGATIVE OUT

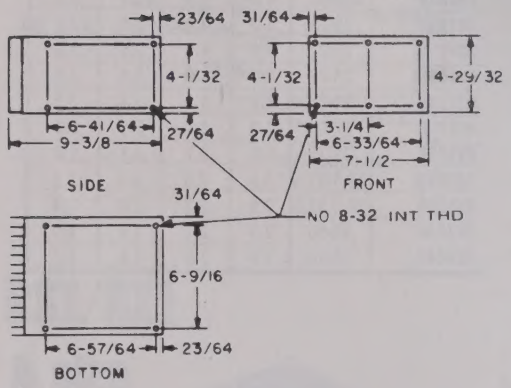


Model No.	Adj. Volt	40°C	Current Rating 50°C	60°C	71°C
RX1CC5/OVP	4.5-5.5	16	14.5	12.7	10.5
RS1CC5/OVP	4.5-5.5	14	12.7	11	9
RX1CC10	9-11	12	10.7	9.3	6.5
RS1CC10	9-11	10	8.5	7.5	6.3
RX1CC12	11-13	10.5	9.5	8.3	6.0
RS1CC12	11-13	9	7.8	7.4	5.7
RX1CC15	14-16	9.5	8.7	7.5	5.5
RS1CC15	14-16	8.5	7.5	6.5	5.2
RX1CC18	17-19	8.5	7.5	7.0	5.0
RS1CC18	17-19	7	6.3	5.8	4.7
RX1CC20	19-21	7.7	7.2	6.5	4.4
RS1CC20	19-21	6.7	5.8	5.0	4.1
RX1CC24	23-25	6.8	6.4	5.7	4.4
RS1CC24	23-25	6.0	5.2	4.7	4.0
RX1CC28	27-29	6.0	5.6	5.0	4.3
RS1CC28	27-29	5.5	5.0	4.6	3.9
RS1CC36	34.5-37.5	4.6	4.3	4.0	3.7
RX1CC36	34.5-37.5	3.8	4.1	3.8	3.3
RX1CC48	46-50	4.0	3.6	3.3	2.9
RS1CC48	46-50	3.4	3.3	3.0	2.7

RS1/RX1

D size



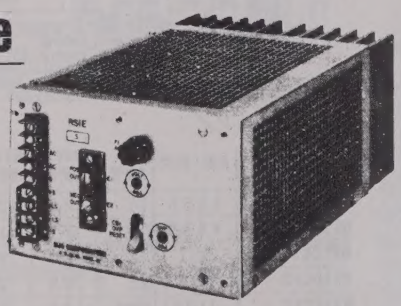


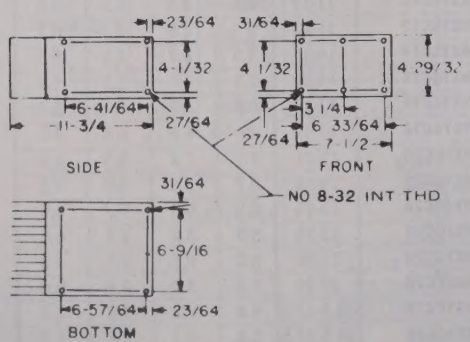
TBI TERMINAL BOARD LEGEND			
TERM NO.	FUNCTION	RECOM'D WIRE SIZE	REMARKS
1	AC	NO. 20 AWG	AC
2	AC	NO. 20 AWG	AC RETURN
3	G	NO. 20 AWG	GROUND
4	+S	NO. 20 AWG	JUMPED TO POS OUT
5	+LS	NO. 20 AWG	NORMALLY JUMPED TO POS OUT
6	-LS	NO. 20 AWG	NORMALLY JUMPED TO NEG OUT
7	-S	NO. 20 AWG	JUMPED TO NEG OUT
8			SPARE
9			SPARE
E1	POS OUT	NO. 10 AWG	POSITIVE OUTPUT
E2	NEG OUT	NO. 10 AWG	NEGATIVE OUTPUT

Model No.	Adj. Volt	Current Rating 40°	50°	60°	71°
RS1-D-5/OVP	4.5-5.5	23.0	20.2	17.2	13.8
RX1-D-5/OVP	4.5-5.5	27.5	24.2	20.6	16.5
RS1-D-10	9-11	16.0	14.0	11.9	8.0
RX1-D-10	9-11	20.0	17.6	14.9	9.5
RS1-D-12	11-13	15.0	13.2	11.2	7.5
RX1-D-12	11-13	18.0	17.6	14.5	9.5
RS1-D-15	14-16	13.0	11.5	9.8	6.9
RX1-D-15	14-16	15.0	13.2	11.2	7.8
RS1-D-18	17-19	10.5	9.2	7.9	6.0
RX1-D-18	17-19	14.0	12.4	10.6	7.6
RS1-D-20	19-21	10.0	8.8	7.6	5.7
RX1-D-20	19-21	13.0	11.3	9.7	7.3
RS1-D-24	23-25	9.0	7.8	6.6	5.3
RX1-D-24	23-25	12.0	10.4	8.8	7.0
RS1-D-28	27-29	7.5	6.5	5.5	4.5
RX1-D-28	27-29	10.0	8.7	7.4	5.9
RS1-D-36	34.5-37.5	6.5	5.7	5.0	3.8
RX1-D-36	34.5-37.5	7.5	6.6	5.7	4.3
RS1-D-48	46-50	5.0	4.4	3.7	3.0
RX1-D-48	46-50	6.5	5.6	4.7	3.5

RS1/RX1

E size

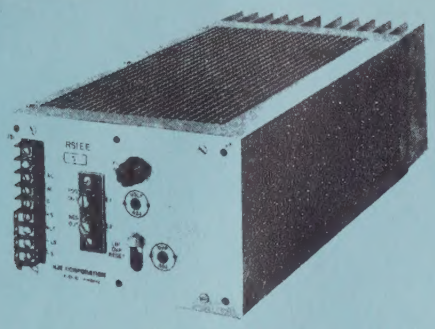


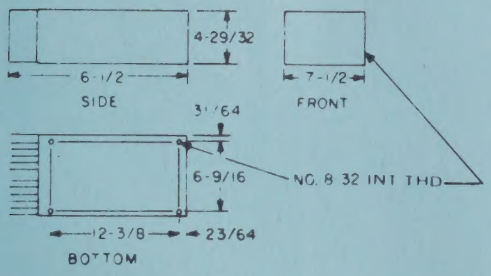


TBI TERMINAL BOARD LEGEND			
TERM NO.	FUNCTION	RECOM'D WIRE SIZE	REMARKS
1	AC	NO. 20 AWG	AC
2	AC	NO. 20 AWG	AC RETURN
3	G	NO. 20 AWG	GROUND
4	+S	NO. 20 AWG	JUMPED TO POS OUT
5	+LS	NO. 20 AWG	NORMALLY JUMPED TO POS OUT
6	-LS	NO. 20 AWG	NORMALLY JUMPED TO NEG OUT
7	-S	NO. 20 AWG	JUMPED TO NEG OUT
8			SPARE
9			SPARE
E1	POS OUT	NO. 8 AWG	POSITIVE OUTPUT
E2	NEG OUT	NO. 8 AWG	NEGATIVE OUTPUT

Model No.	Adj. Volt	Current Rating 40°	50°	60°	71°
RS1-E-5/OVP	4.5-5.5	29.0	25.5	21.6	17.3
RX1-E-5/OVP	4.5-5.5	34.0	30.0	25.5	19.2
RS1-E-10	9-11	22.0	19.4	16.5	11.6
RX1-E-10	9-11	25.0	22.0	18.7	13.0
RS1-E-12	11-13	18.0	15.6	13.2	9.3
RX1-E-12	11-13	22.0	19.0	16.0	11.2
RS1-E-15	14-16	17.0	15.0	12.7	9.1
RX1-E-15	14-16	20.0	17.6	15.0	11.5
RS1-E-18	17-19	16.0	14.0	11.9	9.0
RX1-E-18	17-19	18.0	15.8	13.4	10.0
RS1-E-20	19-21	15.0	13.0	11.2	9.0
RX1-E-20	19-21	17.0	14.8	12.7	10.0
RS1-E-24	23-25	13.0	11.3	9.6	7.7
RX1-E-24	23-25	15.0	13.0	11.0	8.8
RS1-E-28	27-29	11.0	9.6	8.2	6.6
RX1-E-28	27-29	14.0	12.2	10.3	8.2
RS1-E-36	34.5-37.5	8.5	7.5	6.5	4.8
RX1-E-36	34.5-37.5	10.0	8.8	7.7	5.8
RS1-E-48	46-50	7.5	6.6	5.8	4.6
RX1-E-48	46-50	8.5	7.5	6.6	5.2

RS1/RX1
EE size





TB1 TERMINAL BOARD LEGEND			
TERM NO.	FUNCTION	RECOM'D WIRE SIZE	REMARKS
1	AC	NO. 20 AWG	AC
2	AC	NO. 20 AWG	AC RETURN
3	G	NO. 20 AWG	GROUND
4	+S	NO. 20 AWG	JUMPED TO POS OUT
5	+LS	NO. 20 AWG	NORMALLY JUMPED TO POS OUT
6	-LS	NO. 20 AWG	NORMALLY JUMPED TO NEG OUT
7	-S	NO. 20 AWG	JUMPED TO NEG OUT
8			SPARE
9			SPARE
E1	POS OUT	NO. 6 AWG	POSITIVE OUTPUT
E2	NEG OUT	NO. 6 AWG	NEGATIVE OUTPUT

Model No.	Adj. Volt	Current Rating			
		40°	50°	60°	71°
RS1-EE-5/OVP	4.5-5.5	40.0	35.0	30.0	24.0
RX1-EE-5/OVP	4.5-5.5	45.0	39.0	33.0	26.0
RS1-EE-10	9-11	32.0	28.0	23.5	16.5
RX1-EE-10	9-11	36.0	32.0	27.0	18.9
RS1-EE-12	11-13	28.0	24.6	21.0	15.8
RX1-EE-12	11-13	32.0	28.0	23.8	17.8
RS1-EE-15	14-16	24.0	21.0	17.8	12.8
RX1-EE-15	14-16	28.0	24.6	20.9	15.0
RS1-EE-18	17-19	21.0	18.5	15.9	11.5
RX1-EE-18	17-19	24.0	21.1	18.1	13.0
RS1-EE-20	19-21	20.0	17.4	15.0	11.8
RX1-EE-20	19-21	23.0	20.0	17.2	13.6
RS1-EE-24	23-25	18.0	15.7	13.3	10.6
RX1-EE-24	23-25	20.0	17.4	14.8	11.8
RS1-EE-28	27-29	16.0	13.9	11.8	9.6
RX1-EE-28	27-29	18.0	15.7	13.3	10.8
RS1-EE-36	34.5-37.5	12.0	10.5	9.1	7.0
RX1-EE-36	34.5-37.5	14.0	12.3	10.7	8.2
RS1-EE-48	46-50	9.0	7.8	6.9	5.5
RX1-EE-48	46-50	10.0	8.7	7.6	6.0